**Third United Nations International Conference on the Peaceful Uses of Atomic Energy**

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**Abstract**

# THE PRODUCTION OF URANIUM TETRAFLUORIDE BY CALCINATION OF AMMONIUM URANOUS FLUORIDE IN A FLUIDIZED BED

by

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and

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A description is given of a pilot plant designed to produce approximately 100 tons of uranium tetrafluoride per annum. The plant consisted of a fluidized bed reactor in which the ammonium uranous fluoride is calcined in a stream of nitrogen, a system for the recovery of the ammonium fluoride from the effluent gases and a system for recycling the nitrogen gas.

Details are given of the design and construction of the fluidized bed reactor, materials of construction and the fluidization characteristics of the ammonium uranous fluoride. Two systems for the recovery of ammonium fluoride are described.

The first involved the condensation of ammonium bifluoride as a liquid at a carefully controlled temperature, the second makes use of a cooling chamber to condense the gas to form a solid powder.

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**Abstract**

# ENRICHMENT OF HYDROGEN ISOTOPES BY THERMAL DIFFUSION FOR HYDROLOGICAL APPLICATIONS

by

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A two-stage thermal diffusion column system has been developed for tritium enrichment. The critical parameters of the system and the performance characteristics will be described. Enrichment factors of 800 times in equilibrium periods of 30 hours are achieved. The use of such columns in a tritium dating and tracing laboratory will be critically discussed and compared with other techniques.